

Power of Powers

Negative
Exponents

Zero
Exponents

Exponents Day 3

Quotient of Powers

Power of a Product

WARM-UP!

Rewrite as a single power and without using zero or negative exponents.

1. $t^3 \cdot t^6$ t^9

2. $r^5 \cdot r^8 \cdot r$ r^{14}

3. $\frac{a^4 b^6 c^{10}}{a^3 b^5 c^8}$ $a^1 b^1 c^2$

4. $\frac{h^{26}}{h^8}$ h^{18}

5. $\frac{5^{12}}{5^7}$ 5^5

6. $7h^{-5}$ $10^{-2} = \frac{1}{10^2} = \frac{1}{100}$

Extending the Rules of Exponents...

Write each product as a single power without zero or negative exponents.

1. $v^5 \cdot v^{-8}$

$$\begin{array}{l} v^{-3} = \\ \frac{1}{v^3} \end{array}$$

2. $x^{-8} \cdot x^{-3}$

$$\begin{array}{l} x^{-11} \\ \frac{1}{x^{11}} \end{array}$$

3. $6^2 y^{-8}$

$$\begin{array}{l} \frac{6^2}{y^8} = \\ \frac{36}{y^8} \end{array}$$

Extending the Rules of Exponents...

Write each quotient as a single power without zero or negative exponents.

4. $\frac{4^7}{4^{10}}$

5. $\frac{r^{-4}}{r^{-8}}$

6. $\frac{3^{-2}}{3^{10}}$

7. $\frac{u^3 p^{-4}}{u p^5}$

$$\frac{m^5 n^{-4}}{m^{-2} n^7}$$

$$= -4 + 7$$

$$m^7 n^{-11}$$

$$m^7 n^{-11}$$

$$\frac{m^7}{n^{11}}$$

$$\frac{u^2 p^{-9}}{u p^5}$$

MORE Rules of Exponents...

POWER OF A PRODUCT

8. $(3x^2)^3$

$$3x^2 \cdot 3x^2 \cdot 3x^2$$

$$\boxed{27x^6}$$

9. $(2w^2x^6y^3)^2$

$$2w^2x^6y^3 \cdot 2w^2x^6y^3$$

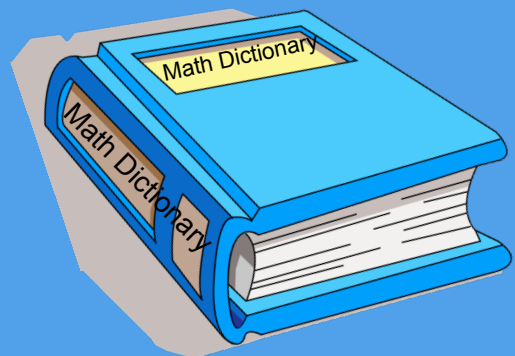
$$\boxed{4 \cdot w^4 \cdot x^{12} \cdot y^6}$$

Power of a Product

To find the power of a product,
find the power of each factor and
MULTIPLY!

EXAMPLE:

$$(4x^3)^2 = 4^2 \cdot x^3 \cdot x^3$$
$$16x^6$$



RANDOM SAMPLE GROUPS!

Let's talk about group expectations!



RANDOM GROUP -COLOR-

Why is anything to the power of zero
always equal to 1?

HINT

**RANDOM GROUP
-NUMBER-**

Sally thinks that $2^4 \cdot 2^5 = 4^{20}$. Is her math correct? EXPLAIN your answer!

$$2^9$$

**RANDOM GROUP
-SYMBOL-**

$$\text{Is } 2x^2 = (2x)^2?$$

EXPLAIN your answer!

**RANDOM GROUP
-LETTER-****Simplify each of the following:**

1.
$$\frac{2x^3y^{-4}}{4x^{-6}y^7}$$

2. $6^{-1}a^4b^{-3}$

3. $(2x^4y^3z^5)^{-2}$

4. $g^{-3} \cdot g^7$

Pull #1

RANDOM GROUP -SYMBOL- SIMPLIFY!

Pull #2

1.

$$\frac{\pi^3 \pi^6}{\pi^5}$$

$$2. \frac{y^5}{y^{10}} \cdot \frac{y^7}{y^4}$$

HOMEWORK!

Exponent Review Worksheet

